

44. (New) The electronic system recited in claim 28, wherein the film comprises one or more vias to couple traces within different layers.

45. (New) The data processing system recited in claim 31, wherein the film comprises one or more vias coupled to corresponding ones of the traces.

46. (New) The data processing system recited in claim 33, wherein the film comprises one or more vias to couple traces within different layers.

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on July 5, 2002, and the references cited therewith.

✓ Claims 20, 24-25, 29-30, and 34 are canceled. Claims 17, 19, 21, 26, and 31 are amended. New claims 35-46 are added. As a result, claims 17-19, 21-23, 26-28, 31-33, and 35-46 are now pending in this application.

Affirmation of Election

As provisionally elected by Applicant's representative, Walter W. Nielsen, on June 4, 2002, Applicant elects to prosecute claims 17-34 of Group II.

Non-elected claims 1-16 of Group I are hereby canceled without prejudice. However, Applicant reserves the right to later file continuations or divisions having claims directed to the non-elected claims.

Amendments to the Specification

Applicant has made several amendments to the specification by substituting "embodiments of the invention" or "disclosure" for "invention". These amendments have been voluntarily made, because Applicant does not wish the claims to be interpreted as being limited to a single "invention". No new matter has been added by way of these amendments to the specification.

Amendments to Claims 17, 19, 21, 26, and 31

Claims 17, 19, 21, 26, and 31 have been amended. No new matter has been introduced. The amendments to the claims are made to satisfy Applicant's preferences, not necessarily to satisfy any legal requirement(s) of the patent laws, and they are not intended to limit the scope of equivalents to which any claim element may be entitled. The specific amendments to these claims will now be discussed.

Independent claim 17 has been amended by reciting that the traces are within the film, including within the conductor region, and by reciting that the plurality of lands are on a surface of the film and coupled to the traces, wherein the lands are to mount corresponding pads of the integrated circuit in a ball grid array. Support for these amendments may be found in FIG. 3; in the written description beginning on page 7, line 11, through page 9, line 21; and in the written description on page 10, lines 20-30.

Dependent claim 19 has been amended by deleting "in the conductor region". Support may be found in FIG. 3 and in the accompanying written description.

Independent claim 21 has been amended by reciting an integrated circuit having a plurality of pads coupled to the plurality of lands in a ball grid array. Support may be found in canceled dependent claims 24 and 25.

Similarly, independent claim 26 has been amended by reciting an integrated circuit having a plurality of pads coupled to the plurality of lands in a ball grid array. Support may be found in canceled dependent claims 29 and 30.

Independent claim 31 has been amended by reciting an integrated circuit having a plurality of pads coupled to the plurality of lands in a ball grid array. Support may be found in canceled dependent claim 34.

New Claims 35-46

New claims 35-46 have been added to provide Applicant with additional protection to which Applicant is entitled. No new matter has been introduced.

New dependent claims 35, 41, 43, and 45 recite that the film comprises one or more vias coupled to corresponding ones of the traces. New dependent claims 36, 42, 44, and 46 recite that the film comprises one or more vias to couple traces within different layers. Support may be found in FIG. 3 and in the written description on page 8, lines 20-23.

New independent claim 37 is similar to independent claim 17. In addition, it recites one or more vias within the film and coupled to corresponding ones of the traces. Support may be found in FIG. 3 and in the written description on page 8, lines 20-23.

New dependent claim 38 is identical to original claim 18.

New dependent claim 39 is similar to original claim 28.

New dependent claim 40 is similar to new dependent claims 36, 42, 44, and 46.

Rejection of Claims 17-20 Under 35 U.S.C. §102(b)

Claims 17-20 were rejected under 35 U.S.C. §102(b) as being anticipated by Behlen et al. (U.S. Patent No. 5,598,033). As mentioned earlier, dependent claim 20 has been canceled.

Behlen discloses a flexible micro BGA stack that includes a flexible interposer (312, FIG. 3) having a main portion 312a and an extension 312b. The interposer 312 has a compliant layer 340 and a flexible layer 338. The flexible layer 338 has a plurality of lands or “central terminals” 348. A die 310 is electrically connected to the central terminals 348 of main portion 312a by means of wires 356 (column 4, lines 31-34). Solder bumps 314 are connected to the central terminals 348 in a BGA arrangement. Solder bumps 314 are for connecting either to corresponding lands 326 of an adjacent interposer, or to corresponding contact pads on a substrate. Traces T1-T4 (FIG. 6) electrically connect solder bumps 314 on the main portion with corresponding lands 326 of the extension (column 5, line 62 through column 6, line 21).

Behlen does not disclose the structural elements recited in claim 17, as amended. For example, Behlen does not appear to disclose inter alia a plurality of traces within the film, including within the conductor region. The traces T1-T4 are only shown schematically in FIG. 6 of Behlen, and there is no other description in Behlen regarding the location of traces T1-T4. Further, Behlen does not appear to disclose inter alia a plurality of lands on a surface of the film and coupled to the traces, wherein the lands are to mount corresponding pads of the integrated circuit in a ball grid array. Behlen does not appear to couple the die (310, FIG. 3) to the interposer using a ball grid array, because Behlen uses wires 356 between peripheral contacts (330, FIG. 3) on the die to corresponding ones of the central terminals 348.

For the above reasons, claim 17 should be found to be allowable over Behlen, and Applicant respectfully requests that the rejection of claim 17 under 35 U.S.C. §102(b) as anticipated by Behlen be withdrawn.

Applicant considers additional elements and limitations of claim 17 to further distinguish over the cited reference, and Applicant reserves the right to present arguments to this effect at a later date.

Claims 18 and 19, as well as new claims 35 and 36, which depend directly or indirectly from claim 17 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

Rejections Under 35 U.S.C. §103(a)

Claims 21-25 and 26-30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Behlen et al. (U.S. Patent No. 5,598,033). As mentioned earlier, dependent claims 24, 25, 29, and 30 have been canceled.

Behlen was discussed previously.

Regarding independent claims 21 and 26, Applicant respectfully asserts that a *prima facie* case for obviousness has not been made, because Behlen fails to disclose *inter alia* an integrated circuit having a plurality of pads coupled to the plurality of lands in a ball grid array.

Regarding the Examiner's arguments concerning dependent claims 23 and 28, Applicant respectfully asserts that Behlen does not disclose a plurality of layers, each comprising a plurality of traces in the conductor region. As mentioned earlier, the traces T1-T4 in Behlen are only shown schematically in FIG. 6, and Applicant could find no other description in Behlen regarding the location of traces T1-T4.

Because the asserted combination of Behlen and the Examiner's official notice of other elements fails to teach or suggest all of the claim limitations present in independent claims 21 and 26, as amended, a *prima facie* case of obviousness has not been established.

For the above reasons, claims 21 and 26 should be found to be allowable over Behlen, and Applicant respectfully requests that the rejection of claims 21 and 26 under 35 U.S.C. §103(a) as being unpatentable over Behlen should be withdrawn.

Claims 22 and 23, as well as new claims 41 and 42, which depend directly or indirectly from claim 21 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

Claims 31-33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Behlen et al. (U.S. Patent No. 5,598,033) in view of Reinschmidt (U.S. Patent No. 5,832,294).

Behlen was discussed previously. Reinschmidt discloses a dual-microprocessor package.

Regarding independent claim 31, Applicant respectfully asserts that a *prima facie* case for obviousness has not been made, because Behlen fails to disclose *inter alia* an integrated circuit having a plurality of pads coupled to the plurality of lands in a ball grid array.

Regarding the Examiner's arguments concerning dependent claim 33, Applicant respectfully asserts that Behlen does not disclose a plurality of layers, each comprising a plurality of traces in the conductor region. As mentioned earlier, the traces T1-T4 in Behlen are only shown schematically in FIG. 6, and Applicant could find no other description in Behlen regarding the location of traces T1-T4.

Because the asserted combination of Behlen and Reinschmidt fails to teach or suggest all of the claim limitations present in independent claim 31, as amended, a *prima facie* case of obviousness has not been established.

For the above reasons, claim 31 should be found to be allowable over any combination of Behlen and Reinschmidt, and Applicant respectfully requests that the rejection of claim 31 under 35 U.S.C. §103(a) as being unpatentable over Behlen in view of Reinschmidt should be withdrawn.

Claims 32 and 33, as well as new claims 45 and 46, which depend directly or indirectly from claim 31 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

Documents Cited But Not Relied Upon For This Office Action

Applicant need not respond to the assertion of pertinence stated for the references cited but not relied upon by the Office Action, because these references are not made part of the rejections in this Office Action. Applicant is expressly not admitting to this assertion and reserves the right to address the assertion should it form part of future rejections.

Conclusion

Applicant respectfully submits that claims 17-19, 21-23, 26-28, 31-33, and 35-46 are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney Walter W. Nielsen at 602/298-8920 or the below signed attorney to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account

No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 2 day of October, 2002.

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Name

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